ORD 1025
10-10-12
3a

Lockheed treatment summary attached

Christy Brown to: Harry Craig, Emerald Laija, Mary Queitzsch 10/10/2012 02:53 PM
Cc: Thabet Tolaymat, Kevin Schanilec, Linda Meyer, Carla Fisher

Attached please find two files:
- a summary of information from the response to EPA's information request regarding treatment activities performed at the various units at the former Martin Marietta/Lockheed Martin site, and
- a pdf copy of a table provided in the response which appears to be a summary of approvals, permit modifications, temporary authorizations, etc. Note I have NOT reviewed this table and cannot confirm whether it is wholly consistent with other documents provided in the response.

Pplease note the Scrubber Sludge Ponds are not included in the summary as there was no indication in these documents that treatment activities were performed at these units, although some maintenance activities (primarily trimming trees from the fenceline) are noted in the operating log.

Let me know if you have questions about these files.

Next up, an index of all documents provided in response to our questions regarding pilot studies and treatment activities.
Thanks, christy

Lockheed treatment activities.docx

Lockheed Binder 21A, Historical Document Review.pdf

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EPA ID No. ORD 1025

Treatment Activities
Compiled by Christy Brown, OAWT
From Response to Information Request, 8-12

Source documents cited:

- Exhibit 2, Binder 2F, Daily Log Notes for January 23, 2005 through July 15, 2012
- Exhibit 20, Binder 20A, First Quarter 2005 Consolidated CERCLA and RCRA Report, Table 4d, RCRA Landfill Air Monitoring and CO_2 Injection - Gas Phase Study, ARCADIS, undated
- Exhibit 21, Binder 21A, see below for specific documents
- Exhibit 22, Binder 22A, see below for specific documents

RCRA Landfill

Date	Activity	Treatment Method	Source
June 2002	Characterized landfill gases		21A, Comprehensive Workplan for Remediation Activities, ARCADIS G&M Inc., 2-12-2004, p. 8
9-1-04	Gas injection	Installation of gas injection system completed	21A, Second Quarter 2005 Consolidated CERCLA and RCRA report, ARCADIS, 7-29-05, p. 5-1
9-2-04 to 9-14-04	Begin gas injection	Carbon dioxide gas 1 or 2 tanks per day (400 lbs per tank) 4,800 lbs of CO_2 injected into landfill	20A, First Quarter 2005 Report 21A, Second Quarter 2005 Consolidated CERCLA and RCRA report, ARCADIS, 7-29-05, p. 5-2
10-6-04 through second quarter 2005	Gas injection	Carbon dioxide gas, 800 lbs per week	21A, Second Quarter 2005 Consolidated CERCLA and RCRA report, ARCADIS, 7-29-05, p. 5-2

10-6-04, 10-7-04	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
10-7-04	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
10-13-04	Gas injection	CO2 gas, 2 tanks	20A, First Quarter 2005 Report
10-20-04	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
10-21-04	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
10-27-04	Gas injection	CO2 gas, 2 tanks	20A, First Quarter 2005 Report
11-4-04	Gas injection	CO2 gas, 2 tanks	20A, First Quarter 2005 Report
11-10-04	Gas injection	CO2 gas, 2 tanks	20A, First Quarter 2005 Report
11-18-04	Gas injection	CO2 gas, 2 tanks	20A, First Quarter 2005 Report
11-24-04	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
11-29-04	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
12-2-04	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
12-6-04	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
12-8-04	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
12-12-04	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
12-15-04	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
12-20-04	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
12-22-04	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
12-27-04	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
1-3-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
1-4-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report

1-5-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
1-10-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
1-16-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
1-17-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
1-19-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
1-24-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
1-26-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report 2F, Daily Log Notes
1-31-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report 2F, Daily Log Notes
2-2-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report 2F, Daily Log Notes
2-6-05	Gas injection	CO2 gas, 2nd bottle	2F, Daily Log Notes
2-7-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
2-9-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
2-14-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report 2F, Daily Log Notes
2-16-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
2-21-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report 2F, Daily Log Notes
2-24-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report
2-28-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report 2F, Daily Log Notes
3-19-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report

			2F, Daily Log Notes
3-21-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report 2F, Daily Log Notes
3-23-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report 2F, Daily Log Notes
3-28-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report 2F, Daily Log Notes
3-30-05	Gas injection	CO2 gas, 1 tank	20A, First Quarter 2005 Report 2F, Daily Log Notes
4-1-05	Gas injection	CO2 gas, 1 tank	2F, Daily Log Notes
4-4-05	Gas injection	CO2 gas, 1 tank	2F, Daily Log Notes
4-18-05	Gas injection	CO2 gas, 1 tank	2F, Daily Log Notes
4-19-05	Gas injection	CO2 gas, 2 tanks	2F, Daily Log Notes
4-24-05	Gas injection	CO2 gas, 1 tank	2F, Daily Log Notes
4-27-05	Gas injection	CO2 gas, 1 tank	2F, Daily Log Notes
4-29-05	Gas injection	CO2 gas, 1 tank	2F, Daily Log Notes
6-15-05	Gas injection	CO2 gas, 1 tank	2F, Daily Log Notes
6-17-05	Gas injection	CO2 gas, 1 tank	2F, Daily Log Notes
6-22-05	Gas injection	CO2 gas, 1 tank	2F, Daily Log Notes
6-24-05	Gas injection	CO2 gas, 1 tank	2F, Daily Log Notes
6-29-05	Gas injection	CO2 gas, 1 tank	2F, Daily Log Notes
7-16-05	Gas injection	CO2 gas, 1 tank	2F, Daily Log Notes
8-30-05	Vacuum pump	Vacuum system startup 35 CFM vacuum blower installed, providing negative pressure to the landfill	2F, Daily Log Notes 21A, Ltr re Post-Closure Care Permit, ARCADIS to ODEQ, 9-7-05, p. 2
9-5-05	Vacuum pump	Pump running ok	2F, Daily Log Notes
9-10-05	Vacuum pump	Pump running ok	2F, Daily Log Notes
10-24-05	Vacuum pump	Turned vacuum on	2F, Daily Log Notes
11-5-05	Vacuum pump	Turned off vacuum	2F, Daily Log Notes

11-6-05	Vacuum pump	Turned vacuum on	2F, Daily Log Notes
11-8-05	Blower	Dan is turning blower off when it rains. Blower is working ok.	2F, Daily Log Notes
12-9-05	Vacuum pump	Turned off vacuum	2F, Daily Log Notes
2-18-06	Vacuum pump	Turned vacuum back on	2F, Daily Log Notes
8-7-06	Vacuum pump	Vacuum pump running fine	2F, Daily Log Notes
9-15-06	Vacuum pump	Vacuum pump running just fine	2F, Daily Log Notes
10-1-06	Vacuum pump	Vacuum pump running ok	2F, Daily Log Notes
10-19-06	Vacuum pump	Vacuum pump running ok	2F, Daily Log Notes
10-29-06	Vacuum pump	Vacuum pump running fine	2F, Daily Log Notes
11-16-06	Vacuum pump	Vacuum running fine	2F, Daily Log Notes
11-25-06	Vacuum pump	Vacuum running fine	2F, Daily Log Notes
12-3-06	Vacuum pump	Vacuum running fine	2F, Daily Log Notes
12-13-06	Vacuum pump	Turned off vacuum pump	2F, Daily Log Notes
3-8-07	Vacuum pump	Turned vacuum pump back on	2F, Daily Log Notes
4-21-07	Vacuum pump	Vacuum ok	2F, Daily Log Notes
5-11-07	Vacuum pump	Vacuum ok	2F, Daily Log Notes
5-20-07	Vacuum pump	Vacuum ok	2F, Daily Log Notes
6-18-07	Vacuum pump	Vacuum running fine	2F, Daily Log Notes
6-28-07	Vacuum pump	Vacuum ok	2F, Daily Log Notes
7-14-07	Vacuum pump	Vacuum ok	2F, Daily Log Notes
8-1-07	Vacuum pump	Vacuum ok	2F, Daily Log Notes
8-10-07	Vacuum pump	Vacuum ok	2F, Daily Log Notes
9-15-07	Vacuum pump	Vacuum ok	2F, Daily Log Notes
10-28-07	Vacuum pump	Vacuum ok	2F, Daily Log Notes
11-10-07	Vacuum pump	Vacuum ok	2F, Daily Log Notes
11-20-07	Vacuum pump	Unplugged vacuum	2F, Daily Log Notes
2-17-08	Vacuum pump	Turned on the vacuum pump	2F, Daily Log Notes
3-10-08	Vacuum pump	Vacuum pump not working, will fix	2F, Daily Log Notes
9-27-08	Vacuum pump	Vacuum ok	2F, Daily Log Notes

10-20-08	Vacuum pump	Vacuum ok	2F, Daily Log Notes
10-31-08	Vacuum pump	Vacuum ok	2F, Daily Log Notes
11-13-08	Vacuum pump	Vacuum ok	2F, Daily Log Notes
11-22-08	Vacuum pump	Vacuum ok	2F, Daily Log Notes
11-30-08	Vacuum pump	Vacuum ok	2F, Daily Log Notes
12-3-08	Vacuum pump	Vacuum ok	2F, Daily Log Notes
12-10-08	Vacuum pump	Vacuum ok	2F, Daily Log Notes
12-27-08	Vacuum pump	Vacuum ok	2F, Daily Log Notes
1-7-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
1-23-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
2-5-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
2-15-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
2-21-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
3-3-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
3-14-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
4-6-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
4-23-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
4-30-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
5-22-09	Vacuum pump	Vacuum running	2F, Daily Log Notes
6-17-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
7-21-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
8-1-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
9-5-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
10-1-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
11-16-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
12-30-09	Vacuum pump	Vacuum ok	2F, Daily Log Notes
1-6-10	Vacuum pump	Vacuum ok	2F, Daily Log Notes
2-3-10	Vacuum pump	Vacuum ok	2F, Daily Log Notes
2-8-10	Vacuum pump	Vacuum ok	2F, Daily Log Notes
2-22-10	Vacuum pump	Vacuum ok	2F, Daily Log Notes
3-3-10	Vacuum pump	Vacuum ok	2F, Daily Log Notes
3-9-10	Vacuum pump	Vacuum ok	2F, Daily Log Notes
3-13-10	Vacuum pump	Vacuum ok	2F, Daily Log Notes
3-20-10	Vacuum pump	Vacuum ok	2F, Daily Log Notes
4-18-10	Vacuum pump	Vacuum ok	2F, Daily Log Notes
4-30-10	Vacuum pump	Vacuum ok	2F, Daily Log Notes
5-15-10	Vacuum pump	Vacuum ok	2F, Daily Log Notes
5-26-10	Vacuum pump	Vacuum ok	2F, Daily Log Notes
Daily Log Notes not provided for 6-23-10 through 12-19-10			
1-6-11	Vacuum pump	Vacuum ok	2F, Daily Log Notes
1-21-11	Vacuum pump	Vacuum ok	2F, Daily Log Notes

1-28-11	Vacuum pump	Vacuum ok	2F, Daily Log Notes
2-8-11	Vacuum pump	Vacuum ok	2F, Daily Log Notes
2-11-11	Vacuum pump	Vacuum ok	2F, Daily Log Notes
3-2-11	Vacuum pump	Vacuum ok	2F, Daily Log Notes
3-30-11	Vacuum pump	Vacuum ok	2F, Daily Log Notes
4-15-11	Vacuum pump	Vacuum ok	2F, Daily Log Notes
4-27-11	Vacuum pump	Vacuum ok	2F, Daily Log Notes
5-16-11	Vacuum pump	Vacuum ok	2F, Daily Log Notes
5-25-11	Vacuum pump	Vacuum ok	2F, Daily Log Notes
7-3-11	Vacuum pump	Vacuum ok	2F, Daily Log Notes
8-10-11	Vacuum pump	Vacuum ok	2F, Daily Log Notes
11-12-11	Caps on vents	Installed caps on RCRA vents. Caps have screens in them to vent RCRA landfill	2F, Daily Log Notes

RCRA Leachate

Date	Activity	Treatment Method	Source
February 2002	Proposed evaporator system	3000 watt electric air heater 13.5 CFM regenerative air blower Large heat-resistant, watertight solids collection bag	21A, Comprehensive Workplan for Remediation Activities, ARCADIS G&M, Inc., 2-12-2004, p. 6
3-18-06	Transfer RCRA sump to CDS tank		2F, Daily Log Notes
9-13-06	Transfer RCRA sump to CDS tank	69 gal	2F, Daily Log Notes
10-18-06	Transfer RCRA sump to CDS tank Light	24 ½ gal Installed light in sump and turned it on	2F, Daily Log Notes
10-19-06		Installed vents in walls of RCRA building so building will vent	2F, Daily Log Notes
11-16-06	Light	Light running fine	2F, Daily Log Notes

11-25-06	Light	Light running fine	2F, Daily Log Notes
12-3-06	Light	Light bulb out	2F, Daily Log Notes
12-5-06	Light	Installed lamp	2F, Daily Log Notes
1-5-07	Light	Installed 125 watt heat lamp	2F, Daily Log Notes
1-9-07	Light	Inspected lamp, looks good	2F, Daily Log Notes
1-6-07	Light	Heat lamp A-OK	2F, Daily Log Notes
2-8-07	Light	Light ok	2F, Daily Log Notes
2-12-07	Light	Light ok	2F, Daily Log Notes
2-23-07	Light	Light ok	2F, Daily Log Notes
3-8-07	Light	Light ok	2F, Daily Log Notes
3-18-07	Transfer RCRA sump to CDS tank	92 gal	2F, Daily Log Notes
3-27-07	Light	Light ok	2F, Daily Log Notes
4-15-07	Light	Light ok	2F, Daily Log Notes
4-21-07	Light	Light ok	2F, Daily Log Notes
5-11-07	Light	Light ok. Sump is drying out, very little liquid in sump.	2F, Daily Log Notes
5-20-07	Light	Light ok	2F, Daily Log Notes
6-5-07	Light	Light ok	2F, Daily Log Notes
6-18-07	Light	Light ok, sump is pretty much dry.	2F, Daily Log Notes
6-28-07	Light	Light ok	2F, Daily Log Notes
7-15-07	Light	Light ok	2F, Daily Log Notes
8-1-07	Light	Light ok	2F, Daily Log Notes
8-10-07	Light	Light ok	2F, Daily Log Notes
9-15-07	Light	Light ok, 2" liquid in sump	2F, Daily Log Notes
10-28-07	Light	Light ok	2F, Daily Log Notes
11-10-07	Light	Light ok	2F, Daily Log Notes
11-20-07	Light	Light ok, 4" liquid	2F, Daily Log Notes
12-1-07	Light	Light ok	2F, Daily Log Notes
12-13-07	Light	Light ok	2F, Daily Log Notes
2-1-08	Light	Inspected, 9 ¼" liquid	2F, Daily Log Notes
2-17-08	Light	Inspected, 9 ½" liquid, 77 ½ gal	2F, Daily Log Notes
3-1-08	Light	Inspected, 10" liquid, 83 gal	2F, Daily Log Notes
3-10-08	Light	Inspected, 10" liquid,	2F, Daily Log Notes

		83 gal	
3-21-08	Transfer RCRA sump to CDS tank Light	86 gal Reinstall heat lamp	2F, Daily Log Notes
4-18-08	Light	Inspected light	2F, Daily Log Notes
5-6-08	Light	Light ok	2F, Daily Log Notes
7-11-08	Light	Light was burned out, replaced heat lamp, working now	2F, Daily Log Notes
7-14-08	Light	Light ok	2F, Daily Log Notes
8-3-08	Light	Light ok, 7 ½ " liquid	2F, Daily Log Notes
9-9-08	Transfer RCRA sump to CDS tank	72 gal	2F, Daily Log Notes
9-27--08	Light	Light ok	2F, Daily Log Notes
10-20-08	Light	Light ok	2F, Daily Log Notes
10-31-08	Light	Light ok, 1" liquid	2F, Daily Log Notes
11-13-08	Light	Light ok	2F, Daily Log Notes
11-22-08	Light	Light ok	2F, Daily Log Notes
11-30-08	Light	Light ok	2F, Daily Log Notes
12-3-08	Light	Light ok	2F, Daily Log Notes
12-10-08	Light	Light ok	2F, Daily Log Notes
12-27-08	Light	Light ok	2F, Daily Log Notes
1-7-09	Light	Light ok	2F, Daily Log Notes
1-23-09	Light	Heat lamp burned out. Need to get more lamps	2F, Daily Log Notes
1-26-09	Light	Installed new heat lamp bulb. Heat lamp is on now	2F, Daily Log Notes
2-5-09	Light	Light ok	2F, Daily Log Notes
2-15-09	Light	Light ok	2F, Daily Log Notes
2-21-09	Light	Light ok	2F, Daily Log Notes
3-3-09	Light	Light ok	2F, Daily Log Notes
3-14-09	Light	Light ok	2F, Daily Log Notes
4-6-09	Light	Light ok	2F, Daily Log Notes
4-23-09	Light	Light ok	2F, Daily Log Notes
4-30-09	Light	Light ok	2F, Daily Log Notes
5-22-09	Light	Light is running. Sump is dry	2F, Daily Log Notes
6-17-09	Light	Light ok, about 1" leachate in sump	2F, Daily Log Notes

7-21-09	Light	Light ok	2F, Daily Log Notes
8-1-09	Light	Light ok	2F, Daily Log Notes
9-5-09	Light	Light ok	2F, Daily Log Notes
10-1-09	Light	Light ok	2F, Daily Log Notes
11-16-09	Light	Light ok	2F, Daily Log Notes
12-30-09	Light	Light ok, 2 ½" leachate, 11 gal	2F, Daily Log Notes
1-6-10	Light	Light ok	2F, Daily Log Notes
2-3-10	Light	Light ok	2F, Daily Log Notes
2-8-10	Light	Light ok	2F, Daily Log Notes
2-22-10	Light	Light ok	2F, Daily Log Notes
3-3-10	Light	Light ok	2F, Daily Log Notes
3-9-10	Light	Light ok	2F, Daily Log Notes
3-13-10	Light	Light ok	2F, Daily Log Notes
3-20-10	Light	Light ok	2F, Daily Log Notes
4-18-10	Light	Light ok	2F, Daily Log Notes
4-30-10	Light	Light ok	2F, Daily Log Notes
5-15-10	Light	Light ok	2F, Daily Log Notes
5-26-10	Light	Light ok	2F, Daily Log Notes
Daily Log Notes not provided for 6-23-10 through 12-19-10			
1-6-11	Light	Light ok	2F, Daily Log Notes
1-21-11	Light	Light ok	2F, Daily Log Notes
1-28-11	Light	Light ok	2F, Daily Log Notes
2-8-11	Light	Installed new heat lamp fixture + lamp in sump. The other quit working	2F, Daily Log Notes
2-15-11	Light	Light ok	2F, Daily Log Notes
3-2-11	Light	Light ok	2F, Daily Log Notes
3-30-11	Light	Light ok	2F, Daily Log Notes
4-15-11	Light	Light ok	2F, Daily Log Notes
4-27-11	Light	Light ok	2F, Daily Log Notes
5-16-11	Light	Light ok	2F, Daily Log Notes
5-25-11	Light	Light ok	2F, Daily Log Notes
7-3-11	Light	Light ok, RCRA sump has 10 ½ of leachate, 89 gal	2F, Daily Log Notes
7-12-11	Fan	Installed fan over RCRA sump to blow air down into sump	2F, Daily Log Notes
7-20-11	Light and fan	Remove light and fan	2F, Daily Log Notes

		from RCRA sump	
7-21-11	Meeting with Fredrick Moore	Went over RCRA inspection, alarm system in sump	2F, Daily Log Notes
7-26-11	Light and fan	Installed heat lamp + fan in RCRA sump	2F, Daily Log Notes
8-10-11	Light and fan	Light and fan ok	2F, Daily Log Notes
8-27-11	Light and fan	Light and fan ok, 12" of leachate in RCRA sump	2F, Daily Log Notes
10-17-11	Light and fan	Light and fan ok, 11" of leachate in RCRA sump, 95 gal	2F, Daily Log Notes
11-12-11	Transfer RCRA sump to CDS tank	95 gal	2F, Daily Log Notes
11-15-11	Light and fan	Light and fan ok, 3" of leachate in RCRA sump, 14 gal	2F, Daily Log Notes
11-30-11	RCRA sump	Alarm light on at RCRA shack. Check out sump, light, reset alarm. Turned the fan speed down to take care of the alarm going off.	2F, Daily Log Notes
1-26-12	Light	Sump, light, outside sump ok	2F, Daily Log Notes
3-10-12	Light	Inspected RCRA sump, light. Replaced heat lamp, it was burned out. 10" of leachate in RCRA sump, 83 gal.	2F, Daily Log Notes
3-12-12	Fan	Inspected RCRA sump. Installed fan on sump. Blowing into sump.	2F, Daily Log Notes
3-22-12	Light	Light ok. 9 ½" of leachate in sump, 77 ½ gal	2F, Daily Log Notes
4-7-12	Light and fan	Light and fan ok	2F, Daily Log Notes
4-20-12	RCRA sump	Checked RCRA	2F, Daily Log Notes

		sump. 5 ½" of leachate in sump, 35 ½ gal	
5-13-12	RCRA sump	8 ½" of leachate in sump, 66 ½ gal. 58 ozs collected in like 46 hours	2F, Daily Log Notes
5-23-12	Light and fan	Light and fan ok	2F, Daily Log Notes
6-3-12	RCRA sump	34 ozs collected in 25 hours, 8" of leachate in RCRA sump, 60 gal	2F, Daily Log Notes

CERCLA Landfill

Date	Activity	Treatment Method	Source
2001	Pilot testing to demonstrate effectiveness of biotreatment technology to reduce cyanide	Unspecified	21A, Comprehensive Workplan for Remediation Activities, ARCADIS G&M, Inc., 2-12-2004, p. 12
3-20-02, 11-21-02, 7-31-03	Limited bioremediation of landfill waste/pilot test of organic carbon surface applications	Surface applications of organic carbon. March 2002 approx 5,000 gallons of dilute beet molasses solution applied to ground surfaced on west and southwest side of landfill, water wash. Surface application repeated in November 2002 (corn syrup) and July 2003 (unspecified).	21A, Comprehensive Workplan for Remediation Activities, ARCADIS G&M, Inc., 2-12-2004, p. 12 - 14 22A, Table 3c, CERCLA Nutrient Applications and LCS Data, no author, undated 22A, Third Five-Year Review Report, ODEQ/EPA, 6-30-05
8-31-04	Surface application to northwest and southwest sides of landfill	~4400 gallons, 40% sugar Bromide tracer	21A, Second Quarter 2005 Consolidated CERCLA and RCRA report, ARCADIS, 7-29-05, p. 5-3 22A, Table 3c, CERCLA

			Nutrient Applications and LCS Data, no author, undated 2F, Daily Log Notes
5-20-05	Nutrient land application	~4400 gallons, 40% sugars	22A, Table 3c, CERCLA Nutrient Applications and LCS Data, no author, undated 2F, Daily Log Notes
9-29-05	Nutrient land application. Expanded application area includes landfill slopes near Manholes 2 and 3	~4400 gallons, 40% sugars	22A, Table 3c, CERCLA Nutrient Applications and LCS Data, no author, undated 2F, Daily Log Notes
4-25-06	Nutrient land application. Expanded application area.	~4400 gallons, 40% sugars	22A, Table 3c, CERCLA Nutrient Applications and LCS Data, no author, undated 2F, Daily Log Notes
11-6-06	Nutrient land application. Expanded application area.	~4400 gallons, 40% sugars	22A, Table 3c, CERCLA Nutrient Applications and LCS Data, no author, undated 2F, Daily Log Notes
4-23-07	Nutrient land application. Expanded application area.	~4400 gallons, 40% sugars	22A, Table 3c, CERCLA Nutrient Applications and LCS Data, no author, undated 2F, Daily Log Notes
10-22-07	Nutrient land application. Expanded application area.	~4400 gallons, 40% sugars	22A, Table 3c, CERCLA Nutrient Applications and LCS Data, no author, undated 2F, Daily Log Notes

CERCLA Leachate

Date	Activity	Treatment Method	Source
December, 2001	Pilot testing to demonstrate effectiveness of biotreatment technology to reduce cyanide	Unspecified batch treatment in small temporary tank	21A, Comprehensive Workplan for Remediation Activities, ARCADIS G&M, Inc., 2-12-2004, p. 12 and p. 13
May, 2002	Permanent shutdown of CDS treatment	Exclusive use of bioremediation technology in the LCS tank since May 2002 with batch discharge. Organic carbon is added to the former CDS storage/treatment tank on an as-needed basis to reduce cyanide concentrations to a level below the discharge limit.	21A, Comprehensive Work Plan for Remediation Activities, ARCADIS G&M, Inc., 2-12-2004, p. 13
2002 and 2003	Batch biotreatment of leachate in CDS tank	Unspecified batch biotreatment of leachate in the LCS tank	21A, Comprehensive Workplan for Remediation Activities, ARCADIS G&M, Inc., 2-12-2004, p. 12
12-2-04	In-LCS treatment of leachate at MH#4, injection	Organic carbon source/nutrient	21A, Second Quarter 2005 Consolidated CERCLA and RCRA report, ARCADIS, 7-29-05, p. 5-4 22A, Table 3c, CERCLA Nutrient Applications and LCS Data, no author, undated
1-23-05	Treatment in CDS tank	10 lbs molasses 8 lbs powdered milk 10 lbs yeast 20 gallons water Dribble in from top by buckets. Aerator working,	2F, Daily Log Notes

		circulating pump working.	
1-24-05	CDS tank	Yeast For each bucket, pour approx half in, then heave remainder toward center. Flow in tank is clockwise looking down. Added yeast such that most of surface area received some.	2F, Daily Log Notes
1-26-05	In-LCS injection system	Nutrients, 2+ gallons	2F, Daily Log Notes
1-27-05	CDS tank Manhole 2 CDS tank	2 gal molasses 2 gal methanol 6 gal water 1 gal mix 9# 10-60-10 fertilizer 6 gal water	2F, Daily Log Notes
1-31-05	CDS tank	200 lbs sodium carbonate (Acto 140) peroxyhydrate Water Turned bubbler back on	2F, Daily Log Notes
2-1-05	Manual application into Manholes 1, 2, and 3	Nutrients	22A, Table 3c, CERCLA Nutrient Applications and LCS Data, no author, undated
2-2-05	Manholes 1, 2 and 3	Molasses mix	2F, Daily Log Notes
2-11-05	CDS tank	Chlorine, 10 5 gal pails Rainwater Mix in sump and add to CDS tank	2F, Daily Log Notes
2-13-05	CDS tank	Chlorine mix (12.5% sodium hypochlorite), 5 pails	2F, Daily Log Notes
2-17-05	In-LCS system Manholes 1, 2,	Molasses solution, turned on Molasses mix	2F, Daily Log Notes

	and 3		
2-19-05	CDS tank In-LCS system Manholes 1, 2, and 3	Sodium hydroxide pellets, 3 2.5 kg jars Rainwater Chlorine, 5 5 gal buckets Aerator Turn on at manhole 4 Added mix, 1-2 quarts	2F, Daily Log Notes
2-22-05	Manholes 1, 2 and 3	Dose manholes	2F, Daily Log Notes
3-5-05	In-LCS system	21 gallons mix in tank	2F, Daily Log Notes
3-19-05	Manholes 1, 2 and 3 In-LCS system	Alcohol, 1 gal Molasses, 1 gal Water, 3 gal 1-2 quarts into manholes 14 gallons into LCS injection tank	2F, Daily Log Notes
3-25-05	In-LCS system	Mix, 10 gal	2F, Daily Log Notes
3-28-05	In-LCS system	Flushed line with alcohol	2F, Daily Log Notes
4-1-05	In-LCS system	Mix, 10 gal	2F, Daily Log Notes
4-6-05	In-LCS system	Mix, 10 gal	2F, Daily Log Notes
4-7-05	Manholes 1, 2, and 3	Mix, 1 - 2 quarts	2F, Daily Log Notes
4-8-05	In-LCS system	Mix, 15 gal	2F, Daily Log Notes
4-24-05	In-LCS system	Mix, 20 gal	2F, Daily Log Notes
4-29-05	Manholes 1, 2 and 3	Mix, 1 -2 quarts	2F, Daily Log Notes
5-6-05	In-LCS system	Filled tank to 20 gal mark	2F, Daily Log Notes
5-25-05	Manholes 1, 2 and 3	Mix, 1-2 quarts	2F, Daily Log Notes
5-18-05	In-LCS system	Mix, 15 gal	2F, Daily Log Notes
5-27-05	In-LCS system	Mix, 10 gal	2F, Daily Log Notes
6-6-05	Manholes 1, 2 and 3	Mix, 1 - 2 quarts	2F, Daily Log Notes
6-8-05	In-LCS system	Mix, 16 gal	2F, Daily Log Notes
6-13-05	Manhole 3	Mix, 1 quart	2F, Daily Log Notes

6-15-05	In-LCS system	Mix, 10 gal	2F, Daily Log Notes
7-14-05	In-LCS system	Molasses, 8 gal Water, 12 gal Out of methanol	2F, Daily Log Notes
7-16-05	CDS tank	Reset aerator to 10 psi, plenty of aeration	2F, Daily Log Notes
8-1-05	Stop injection into LCS		22A, Table 3c, CERCLA Nutrient Applications and LCS Data, no author, undated
8-22-05	Manhole 4 injection system Manhole2 and 3	Restart Dosed with ½ quart each	2F, Daily Log Notes
8-23-05	Resume injection into LCS. Regular weekly dosing in Manholes 2 and 3.	Nutrients	22A, Table 3c, CERCLA Nutrient Applications and LCS Data, no author, undated
8-29-05	In-LCS system Manholes 1, 2 and 3	Mix, 20 gal Mix, 1 gal total	2F, Daily Log Notes
9-9-05	Manholes 1, 2 and 3	Mix, 1 – ½ quart	2F, Daily Log Notes
9-10-05	In-LCS system	Molasses, 20 gal	2F, Daily Log Notes
9-21-05	Manholes 2 and 3	Methanol Molasses Water 1 -- 2 quarts each	2F, Daily Log Notes
9-28-05	Manholes 2 and 3	1-1-3 methanol, molasses, water, 1 – 2 quarts	2F, Daily Log Notes
10-12-05	Manholes 2 and 3	Molasses Methanol Water 1 – 2 quarts each	2F, Daily Log Notes
10-19-05	Manholes 2 and 3	Molasses mix, 1 – 2 quarts	2F, Daily Log Notes
11-9-05	Manholes 2 and 3	Molasses mix, 1 – 2 quarts	2F, Daily Log Notes
12-27-05	Manholes 2 and 3	Mix, 1 – 2 quarts	2F, Daily Log Notes
12-30-05	Injection tank for manhole 4	1:1:3 mix, 10 gal	2F, Daily Log Notes

1-1-06	CDS tank	Started compressor + bubbles	2F, Daily Log Notes
1-4-06	Manholes 2 and 3	Mix, 1 - 2 quarts	2F, Daily Log Notes
1-8-06	CDS tank	Molasses, 28 gal	2F, Daily Log Notes
1-16-06	Manholes	Dosed	2F, Daily Log Notes
1-17-06	Manholes 2 and 3	Mix, 1 - 2 quarts	2F, Daily Log Notes
1-20-06	Injection tank for Manhole 4	Mix, 7 gal	2F, Daily Log Notes
1-22-06	Injection tank manhole 4	1:1:3 mix, 10 gal	2F, Daily Log Notes
1-25-06	Manholes 2 and 3	Mix, 1 - 2 quarts	2F, Daily Log Notes
2-1-06	Manholes 2 and 3	Mix, 1 - 2 quarts	2F, Daily Log Notes
2-7-06	Manholes 2 and 3 Injection tank manhole 4	0/1/2 mix 1:1:3 molasses/methanol/water, 9 gal	2F, Daily Log Notes
2-11-06	Manholes 2 and 3	Dosed	2F, Daily Log Notes
2-13-06	Manholes 2 and 3	0/1/2 mix	2F, Daily Log Notes
2-21-06	Manholes 1 and 3	0/1/2 mix	2F, Daily Log Notes
2-24-06	Manholes 2 and 3	Mix, 1 - 2 quarts	2F, Daily Log Notes
2-27-06	Injection tank at manhole 4	1:1:3 mix, 10 gal	2F, Daily Log Notes
3-1-06	Manholes 2 and 3	0/1/2 mix, 1 - 2 quarts	2F, Daily Log Notes
3-8-06	Manholes 2 and 3	0/1/2 mix	2F, Daily Log Notes
3-12-06	Injection tank at manhole 4	Mix, 2 ½ gal	2F, Daily Log Notes
3-16-06	Manholes 2 and 3	0/1/2 of mix	2F, Daily Log Notes
3-19-06	Injection tank at manhole 4	1:1:3 mix (methanol, molasses, water, 10 gal	2F, Daily Log Notes
3-24-06	Manholes 2 and 3 CDS tank	0/1/2 mix Molasses, 7 buckets (28 gal)	2F, Daily Log Notes
3-29-06	Manholes 2 and 3	0/1/2 of mix	2F, Daily Log Notes
3-30-06	Manholes 4, 3, and 2 Injection tank at manhole 4	1:1:3 mix, 1 gal each 10 gal mix	2F, Daily Log Notes
4-2-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
4-5-06	Manholes 2 and 3	0/4/4 mix	2F, Daily Log Notes

4-7-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
4-9-06	Manholes 2 and 3 Injection tank manhole 4	0/4/4 mix 1 gal each 6 gal	2F, Daily Log Notes
4-11-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
4-14-06	Injection tank at manhole 4 Manholes 2 and 3	Mix, 10 gal 0/4/4 mix 1 gal each	2F, Daily Log Notes
4-18-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
4-23-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
4-26-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
4-30-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
5-2-06	Injection tank manhole 4 Manholes 2 and 3	Mix, 5 gal 0/4/4 mix 1 gal each	2F, Daily Log Notes
5-9-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
5-12-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
5-13-06	Injection tank manhole 4	Mix, 10 gal	2F, Daily Log Notes
5-15-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
5-19-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
5-23-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
5-24-06	Injection tank manhole 4	Mix, 19 gal	2F, Daily Log Notes
5-26-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
6-5-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
6-12-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
6-19-06	Manholes 2 and 3 Injection tank manhole 4	0/4/4 mix 1 gal each Mix, 14 gal	2F, Daily Log Notes
6-23-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
7-4-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
7-11-06	Injection tank manhole 4	Mix, 7 gal	2F, Daily Log Notes
7-16-06	CDS tank	Drained and serviced air compressor	2F, Daily Log Notes
7-17-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes

	Injection tank manhole 4	Mix, 10 gal	
7-31-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
8-7-06	Manholes 2 and 3 Injection tank manhole 4	0/4/4 mix 1 gal each Mix, 9 gal	2F, Daily Log Notes
8-13-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
8-20-06	Manholes 2 and 3 Injection tank manhole 4	0/4/4 mix 1 gal each Molasses, 1 gal Water, 4 gal	2F, Daily Log Notes
8-26-06	Manholes 2 and 3	0/4/4 mix 1 gal each	2F, Daily Log Notes
9-3-06	Manholes 2 and 3	Mix, 1 gal each	2F, Daily Log Notes
9-9-06	Injection tank manhole 4	Mix, 10 gal	2F, Daily Log Notes
9-17-06	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
9-24-06	Manhole 4	Mix, 11 ½ gal	2F, Daily Log Notes
9-30-06	Manholes 2 and 3 Manhole 4	0/4/4 mix, 1 gal each 1 ½ gal	2F, Daily Log Notes
10-8-06	Manhole 4	Mix, 10 gal	2F, Daily Log Notes
10-12-06	Injection tank manhole 4	1:1:3 mix, 10 gal	2F, Daily Log Notes
10-18-06	CDS tank	Molasses, 2 buckets/7 gal	2F, Daily Log Notes
10-19-06	Injection tank manhole 4	Mix, 10 gal	2F, Daily Log Notes
10-28-06	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
11-16-06	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
11-20-06	CDS tank	Using compressor for air injection into CDS tank	2F, Daily Log Notes
11-23-06	Manholes 2 and 3	Mix, 2 quarts	2F, Daily Log Notes
11-25-06	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
11-30-06	Manholes 2 and 3	Mix, 1 - 2 quarts	2F, Daily Log Notes
12-2-05	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 10 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
12-7-06	Manholes 2 and 3	1:1:3 mix, 2 quarts	2F, Daily Log Notes

12-9-06	Injection tank for manhole 1	Molasses, methanol, water, 5 gal	2F, Daily Log Notes
12-14-06	Injection tank Manholes 2 and 3	Mix, 6 gal Mix, 1 -- 2 quarts	2F, Daily Log Notes
12-15-06	Injection tank for manhole 4	Mix, 5 ¾ gal	2F, Daily Log Notes
12-21-06	In-LCS system Manholes 2 and 3	Mix, 5 gal Mix, 1 - 2 quarts	2F, Daily Log Notes
12-28-06	Manholes 2 and 3	Mix, 1 - 2 quarts	2F, Daily Log Notes
12-30-06	Injection tank at manhole 4	1:1:3 mix	2F, Daily Log Notes
12-15-06	Injection tank at manhole 4 Manholes 2 and 3 Manhole 2	Mix, 15 gal 0/4/4 mix, 1 gal each Molasses, 7 gal	2F, Daily Log Notes
12-27-06	Manholes 2 and 3	0/4/4	2F, Daily Log Notes
12-29-06	Injection tank manhole 4	15 gal	2F, Daily Log Notes
1-5-07	Manholes 2 and 3	0/4/4 1 gal each	2F, Daily Log Notes
1-9-07	Injection tank manhole 4	1:1:3 mix, 15 gal	2F, Daily Log Notes
1-15-07	Manholes 2, 3 and 4	Molasses mix, ½ gal each	2F, Daily Log Notes
1-18-07	Manholes 2 and 3	Mix, ½ gal each	2F, Daily Log Notes
1-20-07	Tank manhole 4	Mix, 15 gal	2F, Daily Log Notes
1-21-07	Manholes 2 and 3	Mix, ½ gal each	2F, Daily Log Notes
1-27-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
2-1-07	Injection tank manhole 4	Mix, 14 gal	2F, Daily Log Notes
2-4-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
2-10-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
2-12-07	Injection tank manhole 4	Mix, 15 gal	2F, Daily Log Notes
2-17-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
2-23-07	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes

2-26-07	CDS tank	Molasses, 14 gal, 4 buckets	2F, Daily Log Notes
3-1-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
3-4-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
3-8-07	Injection tank manhole 4	Mix, 15 gal	2F, Daily Log Notes
3-13-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
3-20-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
3-30-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
4-6-07	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
4-9-07	CDS tank	Molasses, 10 ½ gal, 3 buckets	2F, Daily Log Notes
4-21-07	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
4-29-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
5-5-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
5-18-07	Injection tank manhole 4	Mix, 15 gal	2F, Daily Log Notes
5-20-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
5-29-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
6-5-07	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
6-10-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
6-18-07	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
6-25-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
6-28-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
7-16-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
7-25-07	Injection tank manhole 4	Mix, 15 gal	2F, Daily Log Notes
8-1-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
9-12-07	Manholes 2, 3 and 4	1 gal each	2F, Daily Log Notes
9-25-07	CDS tank	Air going into tank now.	2F, Daily Log Notes

9-28-07	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
10-4-07	Manholes 2 and 3	1 gal each	2F, Daily Log Notes
10-12-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
10-18-07	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
10-28-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
11-2-07	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
11-10-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
11-19-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
11-20-07	Injection tank manhole 4	Mix, 15 gal	2F, Daily Log Notes
12-5-07	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
12-13-07	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
12-19-07	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
12-29-07	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
1-13-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
1-14-08	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
1-24-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
1-25-08	CDS tank	Molasses, 17.5 gal	2F, Daily Log Notes
1-27-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
1-28-08	Injection tank manhole 4	Mix, 15 gal	2F, Daily Log Notes

	Manholes 2 and 3	0/4/4 mix, 1 gal each	
2-12-08	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 20 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
2-21-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
2-25-08	Injection tank manhole 4	Mix, 15 gal	2F, Daily Log Notes
3-2-08	CDS tank	Molasses, 21 gal, 6 buckets	2F, Daily Log Notes
3-4-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
3-7-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
3-10-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
3-14-08	Injection tank manhole 4	1:1:3 mix, 20 gal	2F, Daily Log Notes
3-20-08	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
4-3-08	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
4-18-08	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
5-5-08	Injection tank manhole 4	1:1:3 mix, 20 gal	2F, Daily Log Notes
5-17-08	CDS tank	Molasses, 21 gal, 6 buckets	2F, Daily Log Notes
5-19-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
5-27-08	Injection tank manhole 4	1:1:3 mix, 15 gal	2F, Daily Log Notes
5-28-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
6-3-08	Injection tank manhole 4	Mix, 15 gal	2F, Daily Log Notes
6-9-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
6-23-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
6-29-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
7-1-08	Injection tank manhole 4	1:1:3 mix, 20 gal	2F, Daily Log Notes
7-6-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes

7-12-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
7-19-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
7-27-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
7-28-08	Injection tank manhole 4	1:1:3 mix, 20 gal	2F, Daily Log Notes
8-3-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
8-8-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
8-20-08	Injection tank manhole 4 Manholes 2 and 3	Mix, 21 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
8-26-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
9-6-08	Injection tank manhole 4	1:1:3 mix, 15 gal	2F, Daily Log Notes
9-7-08	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
9-18-08	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
9-27-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
9-28-08	Injection tank manhole 4	1:1:3 mix, 15 gal	2F, Daily Log Notes
10-5-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
10-15-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
10-20-08	Injection tank manhole 4	1:1:3 mix, 20 gal	2F, Daily Log Notes
10-25-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
10-31-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
11-6-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
11-17-08	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
11-23-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
12-1-08	Manholes 2 and 3 CDS tank	0/4/4 mix, 1 gal each Molasses, 21 gal	2F, Daily Log Notes
12-11-08	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
12-27-08	Injection tank	1:1:3 mix, 15 gal	2F, Daily Log Notes

	manhole 4 Manholes 2 and 3	 0/4/4 mix, 1 gal each	
1-16-09	Injection tank manhole 4 Manholes 2, 3 and 4	Mix, 5 gal Mix, 1 gal each	2F, Daily Log Notes
1-17-09	Injection tank manhole 4 CDS tank	Mix, 15 gal Molasses, 17 ½ gal	2F, Daily Log Notes
1-25-09	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
2-1-09	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
2-20-09	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
2-21-09	Injection tank manhole 4	Mix, 10 gal	2F, Daily Log Notes
2-27-09	CDS tank	Molasses, 17 ½ gal	2F, Daily Log Notes
3-5-09	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
3-14-09	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
3-21-09	Injection tank manhole 4 Manholes 2 and 3	Molasses, methanol, water, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
3-25-09	Frac Tank 1 and 2	Dosed with 1 ½ gal molasses. Circulate 12 hours today. Add 5 gal leachate from lift station #2 to frac tank 1, 10 gal to frac tank 2. Compressor and aerator working in frac tank 1	2F, Daily Log Notes
3-26-09	Frac Tank 1	Molasses, 2 gal	2F, Daily Log Notes
3-27-09	Frac Tank 1	Circulate 24 hours a day	2F, Daily Log Notes
4-1-09	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
4-4-09	CDS tank	Molasses, 21 gal	2F, Daily Log Notes

4-6-09	Injection tank manhole 4 Manholes 2 and 3	15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
4-24-09	Frac Tank 1	Transfer water out of frac tank 1 to Clean Harbor truck.	2F, Daily Log Notes
5-5-09	Injection tank manhole 4 Manholes 2 and 3	15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
5-21-09	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
6-1-09	Injection tank manhole 4 Manholes 2 and 3	15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
6-6-09	CDS tank Injection tank manhole 4	Molasses, 17.5 gal Mix, 5 gal	2F, Daily Log Notes
6-17-09	Injection tank manhole 4 Manholes 2 and 3	Molasses, methanol, water, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
6-29-09	Injection tank manhole 4 Manholes 2 and 3	Molasses, methanol, water, 10 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
7-4-09	Injection tank manhole 4 Manholes 2 and 3	Molasses, methanol, water, 10 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
7-15-09	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
7-21-09	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
7-23-09	Injection tank manhole 4	Mix, 15 gal	2F, Daily Log Notes
8-02-09	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
8-10-09	Injection tank manhole 4 Manholes 2 and 3	Molasses, methanol, water, 5 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
8-14-09	Injection tank	Mix, 5 gal	2F, Daily Log Notes

	manhole 4		
9-5-09	Injection tank manhole 4 Manholes 2 and 3	Molasses, methanol, water, 10 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
9-21-09	Injection tank manhole 4	Mix, 10 gal	2F, Daily Log Notes
9-22-09	Injection tank manhole 4 Manholes 2 and 3	Molasses, methanol, water, 10 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
10-1-09	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
10-14-09	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 10 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
10-24-09	Injection tank manhole 4 Manholes 2, 3 and 4	Mix, 5 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
11-1-09	Manholes 2, 3 and 4	Dosed, 1 gal each	2F, Daily Log Notes
11-11-09	Injection tank manhole 4	Mix, 7 gal	2F, Daily Log Notes
11-21-09	Injection tank manhole 4 Manholes 2 and 3	Mix, 5 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
11-30-09	Manholes 2 and 3	Dosed, 1 gal each	2F, Daily Log Notes
12-1-09	Injection tank manhole 4	Mix, 5 gal	2F, Daily Log Notes
12-8-09	Manholes 2 and 3	Dosed, 1 gal each	2F, Daily Log Notes
12-14-09	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 10 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
12-18-09	CDS tank	Molasses, 6 buckets	2F, Daily Log Notes
1-6-10	Injection tank manhole 4	Mix, 10 gal	2F, Daily Log Notes
1-11-10	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
1-16-10	Injection tank	1:1:3 mix, 15 gal	2F, Daily Log Notes

	manhole 4		
1-23-10	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
1-25-10	CDS tank	Molasses, 5 buckets,17 ½ gal	2F, Daily Log Notes
2-4-10	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
2-13-10	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
2-19-10	Injection tank manhole 4 Manholes 2 and 3	Mix, 14 ½ gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
2-21-10	CDS tank	Molasses, 17 ½ gal	2F, Daily Log Notes
3-4-10	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 10 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
3-13-10	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 14 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
3-31-10	Injection tank manhole 4 Manholes 2 and 3	Mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
4-3-10	CDS tank	Molasses, 17 ½ gal	2F, Daily Log Notes
4-10-10	Injection tank manhole 4 Manholes 2 and 3	Mix, 10 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
4-17-10	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
4-27-10	Injection tank manhole 4	1:1:3 mix (molasses, methanol, water), 15 gal	2F, Daily Log Notes
5-1-10	Manholes 2 and 3	0/4/4 mix, 1 ½ gal each	2F, Daily Log Notes
5-3-10	Injection tank manhole 4	Mix, 10 gal	2F, Daily Log Notes
5-15-10	Injection tank manhole 4	Mix, 5 gal	2F, Daily Log Notes

	Manholes 2 and 3	0/4/4 mix, 1 gal each	
5-26-10	Injection tank manhole 4 Manholes 2 and 3 CDS tank	Mix, 5 gal 0/4/4 mix, 1 ½ gal each Molasses, 14 gal	2F, Daily Log Notes
5-31-10	Injection tank manhole 4	Mix, 5 gal	2F, Daily Log Notes
6-10-10	Injection tank manhole 4 Manholes 2 and 3 CDS tank	1:1:3 mix, 5 gal molasses mix, 1 ½ gal each Molasses, 14 gal	2F, Daily Log Notes
6-16-10	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 5 gal 0/6/6 mix, 1 ½ gal each	2F, Daily Log Notes
Daily Log Notes not provided for 6-23-10 through 12-19-10			
1-5-11	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 15 gal 0/6/6 mix, 1 ½ gal each	2F, Daily Log Notes
1-14-11	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 15 gal 0/8/8 mix, 2 gal each	2F, Daily Log Notes
1-21-11	Manholes 2 and 3 CDS tank	0/8/8 mix, 2 gal each Molasses, 18 gal	2F, Daily Log Notes
1-22-11	CDS tank	Molasses, 12 gal	2F, Daily Log Notes
1-24-11	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 15 gal 0/4/4 mix, 1 gal each	2F, Daily Log Notes
1-30-11	Manholes 2 and 3	0/4/4 mix, 1 gal each	2F, Daily Log Notes
2-2-11	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 10 gal 0/8/8 mix, 2 gal each	2F, Daily Log Notes

2-11-11	Manholes 2 and 3	0/8/8 mix, 2 gal each	2F, Daily Log Notes
2-12-11	Injection tank manhole 4	1:1:3 mix (molasses, methanol, water), 15 gal	2F, Daily Log Notes
2-18-11	Manholes 2 and 3	0/8/8 mix, 2 gal each	2F, Daily Log Notes
2-21-11	Injection tank manhole 4	1:1:3 mix (molasses, methanol, water), 15 gal	2F, Daily Log Notes
3-1-11	Manholes 2 and 3	Mix, 2 gal each	2F, Daily Log Notes
3-5-11	CDS tank	Molasses, 16 gal	2F, Daily Log Notes
3-7-11	Injection tank manhole 4	Mix, 15 gal	2F, Daily Log Notes
3-13-11	Injection tank manhole 4	1:1:3 mix (molasses, methanol, water), 15 gal	2F, Daily Log Notes
4-4-11	Manholes 2 and 3	0/8/8 mix, 2 gal each	2F, Daily Log Notes
4-9-11	Injection tank manhole 4 CDS tank	1:1:3 mix, 5 gal. had to dump + clean tank. The molasses in the bottom of the molasses tote has gone bad. The molasses reminds me of motor oil. Molasses, 20 gal	2F, Daily Log Notes
4-10-11	Injection tank manhole 4	Mix, 10 gal	2F, Daily Log Notes
4-16-11	Injection tank manhole 4 Manholes 2 and 3	Mix, 5 gal Dosed, 1 gal each	2F, Daily Log Notes
4-20-11	Injection tank manhole 4	1:1:3 mix, 10 gal	2F, Daily Log Notes
4-25-11	Manholes 2 and 3	0/8/8 mix, 2 gal each	2F, Daily Log Notes
4-27-11	Injection tank manhole 4	1:1:3 mix, 15 gal	2F, Daily Log Notes
5-2-11	Manholes 2 and 3	0/8/8 mix, 2 gal each	2F, Daily Log Notes
5-14-11	Manholes 2 and 3 CDS tank	0/8/8 mix, 2 gal each Molasses, 10 ½ gal	2F, Daily Log Notes
5-16-11	Manholes 2 and 3	0/8/8 mix, 2 gal each	2F, Daily Log Notes
5-17-11	Injection tank manhole 4	1:1:3 mix, 15 gal	2F, Daily Log Notes
5-25-11	Injection tank manhole 4	1:1:3 mix (molasses, methanol, water), 5 gal	2F, Daily Log Notes

	Manholes 2 and 3	0/8/8 mix, 2 gal each of mix (one quart molasses – 3 quarts water)	
6-5-11	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 15 gal 0/8/8 mix, 2 gal each of mix	2F, Daily Log Notes
6-12-11	Manholes 2 and 3	Molasses/water mix, 2 gal each	2F, Daily Log Notes
6-17-11	Injection tank manhole 4	Mix, 10 ½ gal	2F, Daily Log Notes
6-22-11	Manholes 2 and 3	0/8/8 mix, 2 gal each	2F, Daily Log Notes
7-2-11	Manholes 2 and 3	Molasses mix, 2 gal each	2F, Daily Log Notes
7-8-11	Injection tank manhole 4	1:1:3 mix, 16 gal	2F, Daily Log Notes
7-10-11	Manholes 2 and 3	Molasses mix, 2 gal each	2F, Daily Log Notes
7-16-11	CDS tank	Molasses, 15 gal	2F, Daily Log Notes
7-17-11	Manholes 2 and 3	0/8/8 mix, 2 gal each	2F, Daily Log Notes
7-20-11	Injection tank manhole 4	1:1:3 mix, 15 gal	2F, Daily Log Notes
7-30-11	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 10 gal Water and molasses mix, 2 gal each	2F, Daily Log Notes
8-6-11	Manholes 2 and 3	Molasses + water mix, 2 gal each	2F, Daily Log Notes
8-12-11	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 10 gal 0/8/8 mix, 2 gal each	2F, Daily Log Notes
8-20-11	Manholes 2 and 3	Molasses water mix, 2 gal each	2F, Daily Log Notes
8-27-11	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 15 gal 0/8/8 mix, 2 gal each	2F, Daily Log Notes
9-3-11	Manholes 2 and 3	0/8/8 mix, 2 gal each	2F, Daily Log Notes
9-6-11	Injection tank manhole 4	Mix, 10 gal	2F, Daily Log Notes
9-19-11	Manholes 2 and 3	0/8/8 mix, 2 gal each	2F, Daily Log Notes

9-20-11	Injection tank manhole 4	Mix, 16 gal	2F, Daily Log Notes
9-27-11	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 15 gal 0/8/8 mix, 2 gal each	2F, Daily Log Notes
10-9-11	Manholes 2 and 3	0/8/8 mix, 2 gal each	2F, Daily Log Notes
10-23-11	Manholes 2 and 3	0/8/8 mix, 2 gal each	2F, Daily Log Notes
11-3-11	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 15 gal 0/8/8 mix, 2 gal each	2F, Daily Log Notes
11-14-11	Manholes 2 and 3	0/8/8 mix, 2 gal each	2F, Daily Log Notes
11-15-11	Injection tank manhole 4	1:1:3 mix, 15 gal	2F, Daily Log Notes
11-25-11	Manholes 2 and 3	0/8/8 molasses water mix, 2 gal each	2F, Daily Log Notes
12-1-11	Injection tank manhole 4	1:1:3 mix, 15 gal	2F, Daily Log Notes
12-12-11	Manholes 2 and 3	0/8/8 molasses + water mix, 2 gal each	2F, Daily Log Notes
12-18-11	Injection tank manhole 4	1:1:3 mix, 15 gal	2F, Daily Log Notes
12-23-11	Manholes 2 and 3	0/8/8 water molasses mix, 2 gal each	2F, Daily Log Notes
1-1-12	Manholes 2 and 3	0/8/8 molasses water mix, 2 gal each	2F, Daily Log Notes
1-2-12	CDS tank	Molasses, 14 gal	2F, Daily Log Notes
1-4-12	Injection tank manhole 4	1:1:3 mix, 10 gal	2F, Daily Log Notes
1-9-12	Manholes 2 and 3	0/8/8 molasses, water mix, 2 gal each	2F, Daily Log Notes
1-15-12	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 15 gal 0/8/8 water molasses mix, 2 gal each	2F, Daily Log Notes
1-21-12	Manholes 2 and 3	0/8/8 molasses/water mix, 2 gal each	2F, Daily Log Notes
1-27-12	Injection tank manhole 4	1:1:3 mix, 15 gal	2F, Daily Log Notes
2-1-12	Manholes 2 and 3	0/8/8 molasses water mix,	2F, Daily Log Notes

		2 gal each	
2-17-12	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 10 gal 0/8/8 molasses/water mix, 2 gal each	2F, Daily Log Notes
2-22-12	Injection tank manhole 4	1:1:3 mix, 15 gal, molasses, methanol, water 1:1:3 mix in gallons	2F, Daily Log Notes
2-26-12	Manholes 2 and 3	0/8/8 molasses water mix, 2 gal each	2F, Daily Log Notes
2-29-12	Injection tank manhole 4	1:1:3 mix, 15 gal	2F, Daily Log Notes
3-1-12	CDS tank	Picked up 8 gallon air compressor from True Value: put it together and installed in CDS shop. Now have air injecting into CDS Tank.	2F, Daily Log Notes
3-5-12	Manholes 2 and 3	0/8/8 water, molasses mix, 2 gal each	2F, Daily Log Notes
3-10-12	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 10 gal 0/8/8 molasses, water mix, 2 gal each	2F, Daily Log Notes
3-21-12	Injection tank manhole 4	1:1:3 mix, 15 gal	2F, Daily Log Notes
3-22-12	Manholes 2 and 4	0/8/8 water + molasses, 2 gal each	2F, Daily Log Notes
3-28-12	Manholes 2 and 3	0/8/8 water molasses mix, 2 gal each	2F, Daily Log Notes
3-29-12	Injection tank manhole 4	5 gal	2F, Daily Log Notes
4-7-12	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 15 gal 0/8/8 methanol water mix, 2 gal each	2F, Daily Log Notes
4-13-12	Manholes 2 and 3	0/8/8 molasses, water mix, 2 gal each	2F, Daily Log Notes

	CDS tank	Molasses, 14 gal	
4-18-12	Injection tank manhole 4	5 gal	2F, Daily Log Notes
4-20-12	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 5 gal 0/8/8 molasses water mix, 2 gal each	2F, Daily Log Notes
4-26-12	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 10 gal 0/8/8 molasses, water mix, 2 gal each	2F, Daily Log Notes
5-5-12	Manholes 2 and 3	0/8/8 molasses, water mix, 2 gal each	2F, Daily Log Notes
5-6-12	Injection tank manhole 4	10 gal	2F, Daily Log Notes
5-12-12	Manholes 2 and 3	0/8/8 water, molasses mix, 2 gal each	2F, Daily Log Notes
5-17-12	Injection tank manhole 4	1:1:3 mix, 15 ½ gal	2F, Daily Log Notes
5-23-12	Manholes 2 and 3	0/8/8 water molasses mix, 2 gal each	2F, Daily Log Notes
5-29-12	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 10 gal 0/8/8 molasses, water mix, 2 gal each	2F, Daily Log Notes
6-9-12	Injection tank manhole 4	10 gal mix	2F, Daily Log Notes
6-20-12	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 10 gal 0/8/8 water/molasses mix, 2 gal each	2F, Daily Log Notes
6-26-12	Injection tank manhole 4 Manholes 2 and 3	1:1:3 mix, 10 gal 0/8/8 water/molasses mix, 2 gal each	2F, Daily Log Notes
7-1-12	CDS tank	Molasses, 10 gal	2F, Daily Log Notes
7-6-12	Manholes 2 and 3	0/8/8 water, molasses mix,	2F, Daily Log Notes

		2 gal each	
7-7-12	Injection tank manhole 4 CDS tank	1:1:3 mix, 10 ½ gal Molasses, 15 gal	2F, Daily Log Notes
7-9-12	Manholes 2 and 3	0/8/8, 2 gal each with 1:3 molasses, water mix	2F, Daily Log Notes

Exhibit 21

Binder 21A

Table 1. Historic Document Review – Comprehensive Work Plan and Permit Modifications, Lockheed Martin Site, The Dalles, Oregon

Date	Title	Contents	Notes		Copies Distributed to:
2004					
Comprehensive Work Plan					
Date	Title	Contents			
02-12-04	Comprehensive Work Plan for Remedial Actions	Pilot tests for Gas Treatment at RCRA Landfill	The pilot test will evaluate the effectiveness on cyanide degradation of directly injecting carbon dioxide gas mixtures into the waste. The injected carbon dioxide will dissolve into the pore water surrounding the waste to create cyanide-degrading conditions. The effect on the RCRA landfill waste will be measured by monitoring cyanide concentrations of the leachate. In addition, landfill gases will be monitored (e.g., hydrogen, methane and oxygen) from the gas vents in the landfill to estimate the effectiveness (degree) of carbon dioxide penetration into the waste. Pilot tests to include: • Pilot evaluation for evaporation of RCRA leachate • Pilot test for gas treatment at RCRA landfill • Surface application program on CERCLA landfill • Leachate treatment in CERCLA leachate collection system • Evaluation of alternative discharge options for CERCLA leachate collection system • Decommission cyanide destruction system • CERCLA monitor well network modifications		
03-24-04	DEQ Comments – Comprehensive Work Plan	List of comments on Work Plan	DEQ in favor of proceeding with pilot tests for gas treatment of RCRA landfill, evaporation of RCRA leachate and in-situ treatment of leachate within CERCLA leachate collection system. Decision on permit modification level to be determined upon completion of tests.		Signed by Bob Schwarz (ODEQ)
08-06-04	Temporary Authorization	Gas Treatment RCRA Landfill, Surface and Inline Biotreatment CERCLA Landfill	Pilot tests to proceed under Temporary Authorizations.	Signed by Fredrick Moore	Cc: Kathy Ivy (USEPA), R10
09-22-04	Sampling and Analysis Plan Addendum	SAP Addendum	SAP revised to reflect addition monitoring requirements during pilot tests.		
2005					
Class 2 Permit Modification					
09-13-05	ARCADIS requests remedy change Cyanide Destruction/Biological Treatment	Request for a remedy change. Revise the treatment method for free cyanide from thermal destruction to bioremediation. In 1994 an Explanation of Significant Differences was written (EPA/ESD/RI 0-94/090) to describe various modifications to remedial actions anticipated in the Record of Decision (ROD) signed September 29, 1998. One of the significant differences described was a change in the leachate treatment system from chemical oxidation for destruction of cyanide followed by chemical precipitation to remove fluoride. The ROD specified that the treated leachate had to meet the standards established pursuant to existing NPDES requirements prior to discharge of the treated leachate to surface water. The performance standard for treatment of free cyanide was established at 0.1 mg/L when an NPDES permit was issued in 1989. During the remedial design phase it was determined that treatment and destruction of cyanide via chemical oxidation would not meet the free cyanide performance standard of 0.1 mg/L. A hydrolysis treatment system, consisting of heating the cyanide and water in a controlled reaction vessel, was determined to be the most technically feasible means of achieving the established performance standard, but not necessarily the most cost effective. The proposed permit modification is to change the method of cyanide destruction from thermal to biological remediation. The proposed biological destruction is the most technically feasible			Cc: Kathy Ivy (USEPA), Bill Bath (Lockheed Martin) (Lockheed Martin)

Date	Title	Contents	Notes	Copies Distributed to:
		and the most cost effective treatment of free cyanide long term goals at this site.		
09-21-05	LMC cover letter	Application submitted with LMC full knowledge and consent		Cc: Kathy Ivy (USEPA)
11-02-05	ARCADIS response to DEQ comments	ARCADIS response to DEQ questions; primarily regarding groundwater monitoring of additional wells		Cc: Harry Craig (USEPA), Bill Bath (Lockheed Martin)
Class 3 Permit Modification				
09-13-05	ARCADIS requests to be added as operator	The process of seeking a Class 3 permit modification through the RCRA permit process is detailed in the Memorandum of Agreement (MOA) signed between the United States Environmental Protection Agency (EPA) and the Oregon Department of Environmental Quality (ODEQ).		Cc: Kathy Ivy (USEPA), Bill Bath (Lockheed Martin)
II.S. Permit Changes				
02-17-05	DEQ email approval – molasses application to CERCLA landfill			CC: Bob Schwarz and Marcy Kirk (ODEQ)
05-14-05	II.S Permit Change – Improved Efficiency of Air Circulation at the RCRA Landfill	ARCADIS proposes to increase the efficiency of the air exchange in the landfill by installing blowers on the air vents. Benefits from installation of a simple airflow system would include: • An engineered venting system, using fans and potentially with humidity controls, should dry the overall waste unit, decreasing leachate production; • Venting will increase flow throughout the RCRA landfill, maximizing the current gas venting of waste, including potentially explosive gases; and • The increased air flow through the landfill will also introduce steady concentrations of ambient CO2.		Cc: Kathy Ivy (USEPA), Bill Bath (Lockheed Martin)
07-27-05	DEQ email approval – installation of blower on RCRA landfill			
08-09-05	DEQ email approval - ARCADIS II.S. change notification – installation of blower for improved air			Cc: Bob Schwarz (ODEQ)
09-07-05	ARCADIS notification of installation of changes	ARCADIS does not propose to include gas injection as part of the Class 2 permit modification; ARCADIS proposed to increase the efficiency of the air exchange in the landfill by installing a blower on one of the air vents. Benefits from installation of a simple airflow system would include: • Drying the overall waste unit and thereby decreasing leachate production; • Increasing air flow throughout the RCRA landfill, maximizing the current gas venting of waste, including potentially explosive gases; and • Introducing steady concentrations of ambient C02, further contributing to the continuation of cyanide destruction		
Sampling and Analysis Plan				
2005				
01-25-05	SAP Addendum	Changes to install pilot tests		Cc: Kathy Ivy (USEPA), Bill Bath (Lockheed Martin)
09-05	SAP Addendum	Cessation of Pilot tests for change in remedy		
Temporary Authorizations				
2005				
08-12-05	TA Status Report	1. Pilot Test: Gas Treatment at the RCRA Landfill The last C02 injection took place July 17, 2005. ARCADIS will not seek to incorporate gas treatment at the RCRA landfill in the		Cc: Kathy Ivy (USEPA), Bill Bath

Date	Title	Contents	Notes	Copies Distributed to:
		permit modification application. 2. Pilot Test: Land Application Treatment of CERCLA Landfill The last surface application of nutrients occurred May 20, 2005. No further surface application of nutrients will take place until authorized by permit modification. ARCADIS will include surface application of nutrients in the permit modification application. ARCADIS and LMC have indicated to the agencies that the Class 2 permit modification will be submitted following adequate review of the five year review document and subsequent discussions related to pertinent technical issues.		(Lockheed Martin)
2006				
Class 3 Permit Modification				
10-30-06	DEQ distribution of replacement pages for Post Closure Care Permit to incorporate ARCADIS as Operator and Co-permittee			Cc: Shawn Blocker, (USEPA), Bill Bath (Lockheed Martin)
II.S. Permit Change				
09-21-06	ARCADIS II.S. Permit Change submittal	ARCADIS submits this notification of intent to install a heat source in the sump of the RCRA landfill. Leachate production at the RCRA leachate production at the RCRA landfill has declined significantly from a daily production (in gallons per day) high of34.3 (01/18/91) to the current rate of 0.4 gpd (09/13/06). Additionally, with the installation of the blower in the vent, drying of the leachate has eliminated the seasonal variation in leachate production. The data indicate the low level of leachate production could further be reduced by the introduction of a small heat source in the RCRA sump. The blower on the vent pipe creates a vacuum at the opening of the sump pipe (in the sump building). This airflow would be used to introduce warm air into the landfill, further reducing leachate production. Rather than drying leachate already drained to the sump, this current request would minimize leachate production due to humidity and moisture within the landfill.		CC: Harry Craig (USEPA), Bill Bath (Lockheed Martin)
10-17-06	DEQ email approval for II.S. change			
2007				
Class 2 Permit Modification				
01-18-07	DEQ Approval with Changes for the Class 2 Permit Modification to Incorporate Biological Treatment at the CERCLA Landfill and Other Changes	The primary purpose of the permit modification request is to replace high-pressure/high- temperature cyanide treatment with biological treatment at the CERCLA landfill. Revised description of the corrective action: This used to be known as the Cyanide Destruction Unit. However, by modification the high pressure/high temperature system has been replaced by a biological treatment train. The unit still consists of a large and small holding tanks and a utility building holding supplies. The RCRA and CERCLA leachate is pumped into the tank system and discharged through a NPDES permit. EPA Region 10 and DEQ developed a Memorandum of Agreement signed by EPA on May 27, 2004. This agreement states that DEQ will be the primary contact for both CERCLA and RCRA operations and that most changes to CERCLA operations will be enacted by RCRA permit modifications. However, the CERCLA consent decree co- exists with the RCRA permit and MOA and is still in effect and that EPA Region 10 maintains its legal rights and responsibilities.		Cc: Harry Craig and Shawn Blocker (USEPA)